GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

Nutrition of Ruminants and Pigs (I700280)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0 **Study time 180 h**

Course offerings in academic year 2025-2026

A (semester 2)	Dutch	Gent

Lecturers in academic year 2025-2026

Ingels, Katrijn	LA22	staff member
Fievez, Veerle	LA22	lecturer-in-charge
Degroote, Jeroen	LA22	co-lecturer

Offered in the following programmes in 2025-2026	crdts	offering
Master of Science in Bioscience Engineering Technology: Agriculture and Horticulture (main subject Plant and Animal Production)	6	A

Teaching languages

Dutch

Keywords

Ruminant nutrition, pig nutrition, feed evaluation, requirements, diet formulation, circular feed resources

Position of the course

This course focuses on the nutrition of ruminants and pigs, covering both traditional feed evaluation systems and new developments, combined with ration adjustments based on farm data and practical observations. Students acquire knowledge of feeding standards and key physiological processes such as maintenance, growth, lactation, pregnancy, and labour, as a foundation for nutrition systems across different livestock categories. The emphasis is on the practical application of this knowledge in farm management and advisory services, with specific attention to nutritional needs and disorders linked to physiological stages such as weaning, early lactation, and reproduction. Circular and non-human-edible feed resources, as well as strategies to address environmental issues, animal welfare, and animal health challenges, are examined and developed within a guided learning framework.

Contents

THEORY

1. Introduction to Animal Nutrition

1.1 General principles of energy and protein evaluation systems
1.2 Circular feed streams and their nutritional characteristics
1.3 Vitamins, minerals, trace elements and feed additives
1.4 Diet formulation: basics & new developments
1.5 Integration of farm data and on-farm observations to optimize feeding
1.6 Assessing sustainability in animal nutrition

2. Ruminant Nutrition: Sustainable Strategies for Health, Welfare, and Production

2.1 Application of energy and protein evaluation systems
2.2 Feeding lactating cattle
2.3 Feeding calves
2.4 Feeding beef cattle
2.5 Sustainable diets and circular feed streams in ruminant nutrition

3. Pig Nutrition: Sustainable Strategies for Health, Welfare, and

Production

3.1 Application of energy, protein, and amino acid evaluation systems
3.2 Feeding gestating and lactating sows
3.3 Feeding growing pigs and piglets

PRACTICAL EXERCISES

The exercises in this course focus specifically on applying theoretical knowledge in a practical context, with an emphasis on direct farm management support and advisory services. Through guided exercises, students learn to formulate and optimize ruminant and pig diets based on the physiological status of the animal, using advanced calculation tools. Diets are assessed holistically, considering technical feasibility, economic profitability, sustainability, and farm-specific conditions.

Farm management aspects are deeply integrated, with students analyzing practical scenarios and developing solution-oriented strategies in collaboration with industry experts. Field visits to farms and interactive discussions with specialists provide concrete insights into the operational management of feed and diet aspects. The emphasis is on developing practical skills and making well-considered trade-offs between animal health, welfare, production efficiency, and sustainability within a farm context.

Initial competences

This course builds on certain learning outcomes of the course units Zoology: Morphology and Systematics','Animal Physiology', 'Digestive physiology of the animal' and 'Reproductive physiology of the animal' or the learning outcomes have been achieved differently.

Final competences

1 *Students can apply principles of energy, protein, and amino acid evaluation systems to formulate and optimize practical diets for livestock*
2 *Students can apply circular feed streams and sustainable feeding strategies within a farm context.*
3 *Students integrate technical, economic, and sustainability criteria when evaluating diets under various farm conditions.*
4 *Students analyze practical scenarios and develop solution-oriented strategies for feed management in collaboration with industry experts.*
5 *Students use farm data and on-farm observations to support diet formulation and optimization*
6 *Students evaluate the environmental, welfare, and health impacts of farm diets and develop strategies to improve them.*
7 *Students gain concrete insights into operational feed and diet management through excursions and interactions with industry professionals.*

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Seminar, Excursion, Lecture, Independent work

Study material

Type: Syllabus

Name: Syllabus
Indicative price: Free or paid by faculty
Optional: no
Additional information: Ufora

References

Specialized journals, scientific articles, and books. The exact references will be provided in the course materials available on Ufora.

Course content-related study coaching

During the contact hours, the various topics are discussed under the guidance of the lecturers. Different forms of practical exercises include excursions, guided calculation exercises, group work with specific feedforward and feedback sessions, and discussion sessions with experts from the field.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Oral assessment, Written assessment

Examination methods in case of periodic assessment during the second examination period

Oral assessment, Written assessment

Examination methods in case of permanent assessment

Written assessment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

Periodic evaluation: oral exam with open questions; written theory question; written calculation exercises.
Non-periodic evaluation: written assignments, both individual and group work.
A second examination opportunity is available for the non-periodic evaluation, but in a modified form.

Calculation of the examination mark

The final grade will be calculated as follows: 50% oral exam, 25% calculation exercise during the exam, and 25% permanent evaluation.
If a student does not participate in the evaluation of one of the components, or scores less than 8/20 (non-rounded) on either the theory or the exercise components, it is no longer possible to pass this course. If the calculated final score were to be 10 (or more) out of 20, it will be reduced to 9/20.